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SCIENCE NEWS LETTER

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THE WEEKLY SUMMARY OF CURRENT SCIENCE • APRIL 17, 1948

Neandertal Haunt

See Page 243

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ANTHROPOLOGY

Neandertal Man in Africa

Fragments of human fossils discovered in a cave in North Africa prove that this extinct race was not confined to Europe and Asia, as previously believed.

See Front Cover

➤ NEANDERTAL hunters, the low-brows of the Old Stone Age, prowled North Africa while Ice Age glaciers held most of northern Europe in their cold grip. Evidence of the presence of Neandertal man in Africa has been discovered in a cave near the northwestern corner of that continent by an expedition under the direction of Dr. Hugh Hencken, director of the American School of Prehistoric Research at Cambridge, Mass.

The cave is one of a group known as the Caves of Hercules, because of their proximity to the traditional Pillars of Hercules, on the Strait of Gibraltar. Human fossils were limited to several teeth and part of the upper jaw of a Neandertaler. These, with similar fragments found at Rabat in French Morocco by French scientists, constitute the first proof that Neandertal man ever lived in Africa. Previous finds of this extinct race have been confined to Europe and Asia.

Another race of prehistoric hunters who occupied the cave during the Ice Age have been given the name Aterians. With beautifully flaked weapons of flint they hunted such game as elephant, rhinoceros and giraffe, now wholly unknown in this part of Africa. Reason for their presence some 75,000 years ago is that while the glaciers occupied much of Europe the climate of North Africa was much more humid than it now is, so that vegetation capable of supporting such big game could grow in what eventually became semi-arid and even wholly desert land.

Neandertalers and Aterians were not the first human occupants of the land. Dr. Hencken and his colleagues found crude stone handtools indicating the presence of a primitive human population as much as 150,000 years ago, during a warm interlude in the Ice Age when sea level was 60 feet higher than it now is. No skeletal remains have been found of these earlier peoples.

The Aterians were eventually displaced by a new invasion from the East, some 5,000 or 6,000 years ago. These newcomers were no longer hunters, but a farming and pastoral people, believed to be the ancestors of the Berbers now found in the area.

On the cover of this week's SCIENCE NEWS LETTER are shown Prof. Carleton S. Coon of Harvard, a member of the expedition, and his Arab assistant, Mustapha. They are digging for remains of Neolithic man in one of the caves.

The American School of Prehistoric Research occupies quarters on the Harvard University campus, and its director, Dr. Hencken, is also curator of European archaeology in the University. The work of the School in Europe, Asia and Africa has been supported in part by grants from the Viking Fund and from the American Philosophical Society.

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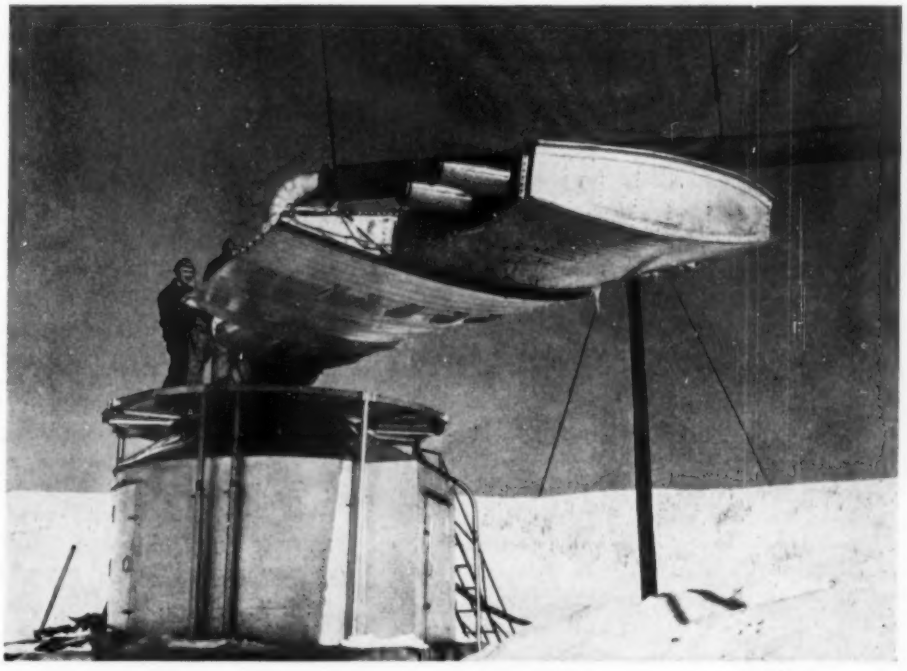
BIOCHEMISTRY

Steps in Photosynthesis

➤ ALL chemical steps in photosynthesis, fundamental food-making process in green plants, are now believed to be known, thanks to the use of radioactive carbon as a tracer element, Dr. Melvin Calvin, University of California chemist, reported in a lecture at Western Reserve University in Cleveland.

Working with Dr. Andrew Benson, Dr. Calvin recently identified the last two intermediate compounds prior to sugar formation as phosphoglyceric acid and triose phosphate. The latter is itself a simple sugar.

Last year, the Berkeley scientists demonstrated that intermediate products in photosynthesis include amino acids, which are building-blocks of proteins; other organic acids such as succinic, fumaric and malic; and neutral sugars. Compounds unidentifiable at that time turned out to be the two reported by Dr. Calvin now. He said that the biggest problem now confronting scientists in



***HELICOPTER JETS**—Jet propulsion for helicopters uses small jet engines on the rotor blades that give lift and forward motion to the aircraft. They are being tested for the U. S. Air Force by General Electric engineers at Schenectady. The first Air Force rotary-wing aircraft to use a jet power plant is the McDonnell Little Henry, flight-tested in May 1947.*

this field is the explanation of how light is utilized by plants to bring about known transformations. One possibility is that light and chlorophyll set free hydrogen atoms from water in the plant. Then a catalyst, such as a co-enzyme, does the job of combination.

He stated that some of the intermediates in photosynthesis are identical with compounds formed by the same plants, but so far it has been proven impossible to distinguish early intermediates in photosynthesis from fermentation products. But more advanced intermediates can be identified by the positions of radioactive carbon atoms in their molecules, since such carbon atoms reach positions in these molecules that are impossible to reach by fermentation.

The experiments were performed both in darkness and in light. Pre-illuminated plants exposed to radio carbon in darkness were able to form the same intermediate compounds as plants given 30-second exposure to radioactive carbon in light. Dr. Calvin said that this research further confirms the previous theory that photosynthesis is the reverse of respiration in plants and animals. Intermediates formed in photosynthesis are the same as those formed when animals break down sugars to form carbon dioxide and water but in reverse order.

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PUBLIC HEALTH

WHO Contributor to Peace

U. S. apparently to play only observer's role when full-scale activities begin with the meeting in June of the World Health Assembly.

➤ AN important aid to world peace in which the United States seems destined to play only an observer's role is the forthcoming World Health Assembly, scheduled to meet in Geneva, Switzerland, in June of this year.

The World Health Assembly will mark the beginning of full-scale activity of the World Health Organization. The Soviet Union has become the 24th of the necessary 26 members of the United Nations to join WHO, and two more seem assured. The United States will not be one of them unless the Rules Committee of the House of Representatives reverses its recent action in tabling indefinitely the bill that would enable us to join WHO.

The World Health Assembly will be the first in a series of annual assemblies "which can be an important focus of the world's hope of peace and life," Dr. H. van Zile Hyde, alternate U. S. representative to WHO's interim commission, declared in a recent State Department Bulletin.

The International Health Conference which laid the plans for WHO and the successful course of its interim commission, he said, "have confirmed the historical fact that in the field of health nations can meet together in a spirit of friendship and understanding, and arrive at firm decisions which are carried through to an effective conclusion for the betterment of mankind."

Examples of accomplishments expected through WHO, and already begun under its interim commission, are found in malaria control, tuberculosis control and improvement of the mental and physical health of the world's children who are its future citizens and potential war or peace makers.

Malaria, which affects the world's food supply as well as its health, can be controlled "even to the point of eradication," Dr. Hyde declared. "What is required is the extension of knowledge and provision of leadership to affected areas. In Greece, for example, where through the centuries malaria has annually attacked 1 to 3 millions of a population of 7.5 million, the disease has been reduced to a minor problem—by Greeks—under the leadership of a handful of experts sent into the country by UNRRA and maintained there now by WHO's interim commission."

On tuberculosis Dr. Hyde declared that, internationally, the final conquest of this great plague is "in the hands of the United Nations itself and those of its specialized agencies concerned with world economic health. Tuberculosis is a disease that can be suppressed by a planned attack. The low death rate of 32 per 100,000 in Denmark, as contrasted with rates of 200 to 400 per 100,000 in several other areas of Europe, is a direct result of such attack.

"The interim commission has recognized that the WHO can contribute significantly towards its control through the extension of professional knowledge by fellowships, demonstrations and expert advice to governments, through the extension of public knowledge concerning the disease and its method of spread; by the promotion of the eradication of tuberculosis in cattle and particularly, now, by the extension of the use of BCG vaccine.

"The commission has not felt it prudent to wait for the WHO in order to extend the use of BCG vaccine in areas in which tuberculosis is epidemic. It is therefore sending teams to India, at the request of that government, to demonstrate the technique of vaccination in the hope of extending its use there on a wide basis. At the same time it is providing to the International Chil-

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dren's Emergency Fund a panel of experts to advise the Fund on the technical aspects of a program upon which the Fund is embarking to vaccinate an estimated 15,000,000 children in Europe. The Commission has, as well, accepted the responsibility for conducting studies to determine the effect on tuberculosis rates of this vast vaccination program."

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MEDICINE

Nose Remedy Tests Urged

Cites examples of damage to lining of nose and sinuses and brain in warning against premature use of new medicines.

➤ PATIENTS pay through the nose, literally, for sinus and other nose medicines when these are used without first being tested in the noses of animals, Dr. Noah D. Fabricant of Chicago charged at the meeting in Atlantic City of the American Laryngological, Rhinological and Otological Society.

"Knowledge of undesirable caustic reactions (of such drugs) sometimes comes initially via the patient's nose," he declared. "If the truth be stated bluntly, this is literally paying through the nose."

Two cases of chemical meningitis following irrigation of the nasal sinuses with tyrothricin, one of the penicillin-like drugs, have recently been reported. The disease process was recreated in animal experiments, "an example of closing the garage doors after the automobile had been stolen," Dr. Fabricant commented.

Years after nose and throat specialists had "liquidated" mercurochrome by the trial and error method on patients, it was discovered that when the chemical is put in the noses of experimental animals it passes, in much less than two hours, through the linings of the nose and sinuses, the bony walls of the frontal sinus and even through the covering of the brain to stain the cortex of the brain itself.

"Wild exaggerations" were made a few years ago for a highly alkaline solution of a sulfa drug, sodium sulfathiazole, for local treatment of chronic sinus trouble. Then it was discovered that the medicine was extremely caustic to the lining of the nose and sinuses and damaging to the little hair-like processes inside.

Besides making sure the drugs they use have been thoroughly tested. Dr. Fabricant reminded nose and throat specialists that in choosing a medicine for their patients they need to consider the season of the year. The differing degrees of virulence of germs and the possibility of bacteria having undergone metamorphosis must be taken into account. The pattern of nose and sinus infections changes from year to year, so the medicine that was helpful one year may not remedy sinus infection in the same patient the next year.

Penicillin and sulfa drugs used in the nose for the most part do not help in long-standing chronic sinus infections. This, Dr. Fabricant explained, is because the linings of nose and sinuses have become so thickened and tough the drugs cannot get through to hit the germs. In some cases of acute infection he considers penicillin and other antibiotics are "of minor help."

A "crying need" exists for new medicines to shrink the blood vessels and swollen tissues of stuffy noses in colds and sinus infections. If they can be produced in combination with one of the newer penicillin-like drugs, so much the better. But Dr. Fabricant thinks existing nose medicines combining sulfa drugs or penicillin with a chemical to shrink the swollen tissues bring relief primarily because of the shrinking chemical. The sulfa drug or antibiotic addition serves actually, in his opinion, as "a talking point."

Penicillin or other medicated throat lozenges are of doubtful value. The explanation Dr. Fabricant gave is that the germ-stopping chemicals do not get far enough back into the throat in sufficient quantity, and when the chemicals do reach the tonsils, they stay on the surface without getting at the germs within the tonsils.

Giving anti-germ chemicals by another method, insufflation, however, seems to help in some cases of sore throats. But no matter how the drugs are applied, he pointed out, so much will be washed away from tonsils and throat by the saliva that an effective concentration cannot be kept for long.

Use of sodium bicarbonate and other alkalies for prevention or treatment of colds has become a part of American folklore, but is of no value. The normal human throat is either on the acid side most of the time or slightly alkaline in limited instances, Dr. Fabricant's studies show. Consequently trying to "alkalinize" it is trying to reverse the normal state instead of trying to get back to it.

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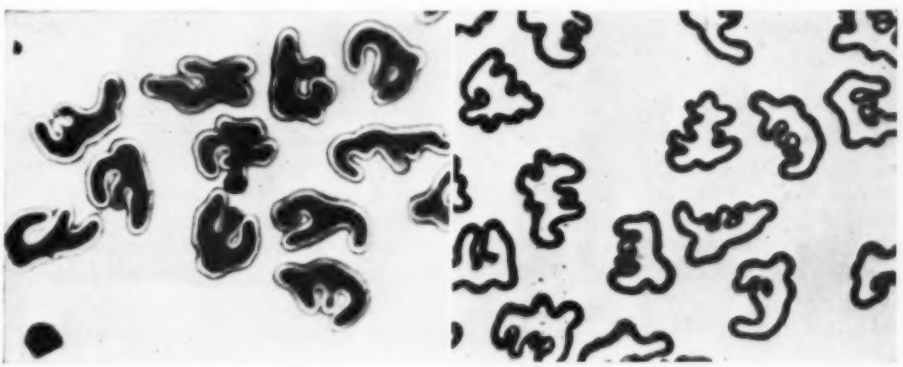
CHEMISTRY

Viscose Rayon Does Not Absorb Dye Uniformly

➤ VISCOSE rayon, the kind used in most rayon dresses and shirts, does not absorb dye at a uniform rate. The core of the fibers usually takes up the dye more quickly and loses it more easily than the skin.

In a cross-section of ordinary tire-cord yarn stained with Solophenyl Fast Blue Green BL dye the core is completely colored, but dye has not yet penetrated the skin.

But after dye such as Victoria Blue, used in preparing the rayon fibers, had penetrated both the core and the skin,



***RAYON DYE PROCESS**—These are cross-sections of rayon fibers showing, on the left, that the core absorbs the dye before the skin, and, on the right, that dye washes out of the core more quickly than from the skin.*

the rayon skin is more intensely colored. The fibers were first permitted to take up all the dye they could absorb, then washed in alcohol to bleed out some of the dye. They were dried after all color had bled out of the core, but before much had been lost from the skin. Then an end-on view of the fibers was photographed.

The specimens were prepared by Dr. P. H. Hermans, director of the Institute for Cellulose Research, Utrecht, The Netherlands. Full details on staining viscose rayon fibers are given by Dr. Hermans in the *Textile Research Journal* (Jan.).

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GENERAL SCIENCE

Plan Tri-State Project

Educators meet to formulate plans for the development of Louisiana, Mississippi and Arkansas so that brains, brawn and raw resources be better utilized.

➤ THERE are raw materials, good rich soil, plenty of sunshine and human brawn and brains in the area of the Middle South on both sides of the lower Mississippi river.

The brains of this area are going to do something about making Louisiana, Mississippi and Arkansas more useful to the nation and to the peoples of these three states.

The leading educators—college presidents and research directors—of these three states sat down together when Greenville, Miss., cotton town near the junction of the three states, welcomed politicians, industrialists, and others to dedicate a new tri-state drive powered by the public utilities of the region. It was the first time the educators have seized the opportunity to start pulling together on the major problem of meshing the colleges and laboratories with industries and agriculture into the daily life of the region.

One of the principal exports of this region to the North consists of human beings. Population flows out of the area, along with other raw materials such as cotton, sugar, rice, tung oil, shrimp, petroleum, natural gas and other products.

But the major export of population—human beings who move north for better opportunities—consists largely of unskilled labor. This Middle South is actually an importer of professional and managerial people. Educators at the Greenville meeting were told this is a real problem. And the youth of the area who are educated in the area or who go to the Eastern colleges for advanced study are likely to get sucked away to other more aggressive regions.

Cultivation of brains, in the fields of science, technology and social applications, is a prime objective of the tri-state educational council formed under the chairmanship of President Rufus C. Harris of Tulane University.

In the long haul, this is deep plowing for the solution of agricultural problems, dispersed small industries using the raw materials available, and chemical processing of the oil, gas, sulfur, minerals, etc.

Already science has remade practices and methods on the Mississippi delta. Sugarcane would be nearly extinct if breeders had not been successful in remodeling this plant to resist the blight. Good beef cattle are raised, thanks to such new tricks as liming the soil, year-round grazing and feeding on dehydrated sweet-potatoes.

Diseases have been conquered in the region and as a result of medical research better health has flowed to other parts of the nation and the world.

Research is an important activity in these three states. Textile developments are a prime interest of the U. S. Department of Agriculture's Southern Regional Laboratory. The technique of controlling unruly rivers is practiced on the great Mississippi by Army engineers.

But the educators of these three states see the need of more research, more graduate schools, more trained brains—and they want to start down at the "grass-roots" in the homes and the schools where boys and girls get their basic education and develop directions for living.

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GENERAL SCIENCE

Work or Fight in Next War

➤ IT will be work or fight for all of us in the next war, with expected civilian casualties running so high that large numbers of doctors must be kept at home to care for them. This is the picture drawn by Army, Navy and civilian medical authorities at the meeting of the Council on National Emergency Medical Service of the American Medical Association in Chicago.

"Every ounce of available manpower will be needed," Rear Admiral Morton D. Willcutts declared. "Selective Service rejections during the last war at times exceeded 40% of those registered. That won't do in the next war.

"Those with chronic diseases, even of the psychiatric type, must find their stride and fight or work," he warned.

The Pearl Harbor blow of the next war, he forecast, will come as a special weapon for mass destruction. Whether this will be an atom bomb, a chemical agent or some unnamed weapon he said was beyond his province to name. But the death rate, he declared, will be "appalling" and the question of disposal of the civilian dead will be formidable. The new weapon will leave persistent agents of destruction so that to re-enter or approach them will be dangerous.

A total of 116,000 physicians, or one to every 1,250 of the civilian population, is the civilian medical manpower need expected to be recommended by the American Medical Association's council.

These must be "effective, able-bodied practicing physicians," it will be stressed. This is the number that will be needed to maintain civilian medical care and treatment during all phases of national emergency, and for continuing medical education and research programs.

The medical association is also expected to recommend that under a temporary draft or UMT the younger physicians who have not had military service as medical officers should be called first. The recommendation will also probably state that physicians within the military age limit requirements who have had no military training should likewise be called.

Advice on this problem of how to bring the Navy medical corps up to strength was asked of the association by Admiral Willcutts, speaking for the Navy's Bureau of Medicine and Surgery.

Only eight of the 48 states, Hawaii, the Panama Canal Zone, Virgin Islands

and the District of Columbia have state disaster relief programs in effect, Dr. Richard A. Meiling, of Ohio State University, reported. As secretary of the AMA National Emergency Medical Service Council, he requested this information two months ago from all states and territories. Answers were received from 37. None of the eight with programs in effect nor any of the others with programs in the planning stage have included a medical adviser from the state medical association.

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MEDICINE

Clue to Artery Damage

Mechanics of damage from large fat particles explained. They are trapped in artery walls by scavenger cells. Years of this thickens and hardens arteries.

➤ ONE kind of artery disease results from the simple, well-known fact that oil and water do not mix.

The artery disease is known to doctors as atherosclerosis. It is a fatty degenerative kind of arteriosclerosis, hardening of the arteries to you.

The mechanics of how it develops, beginning with the difficulty of mixing oil and water, have been worked out by Dr. John E. Moreton of Salt Lake City.

Because oil and water do not mix, the fats and oils in blood plasma, which is about 90% water, must be carried in a special form, Dr. Moreton explains in a report to the journal, *Science* (April 9).

The fats from food that get into the blood via the intestines are not carried in the same finely divided state as fatty materials normally in blood plasma.

When a man eats about two ounces of butter fat, a shower of these big fat particles descends on his blood stream about four hours later. Reporting this finding last fall, Dr. Moreton said that the size of these fat particles gave a clue to how artery damage could result from fat-rich meals eaten over a period of many years.

Today Dr. Moreton gives more links in the chain leading from many fat-rich meals to artery damage. When the big fat particles get into the innermost part of the artery, it is a signal for certain body cells to go into their primitive scavenger act by which they protect the body against disease germs and other harmful substances. These cells arrest, engulf and trap the big fat particles, holding them in the artery walls.

By gradual, infinitesimal stages, the trapping of big fat particles thickens and hardens the artery walls to the point where the bore of the artery is closed and blood cannot get through.

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MEDICINE

Radioactive-Free Oasis

➤ A LITTLE world where there will be no dangerous radioactivity, no atomic bomb by-products, is now being created. It will be peopled by highly pedigreed mice, rats, rabbits and guinea pigs. But humans exposed to dangerous radiation at work or in any future atomic bombings will benefit.

The radioactive-free oasis is being established at the Jackson Memorial Laboratory at Bar Harbor, Maine. Its unique reversal of present trends at medical research laboratories was announced by its director, Dr. Clarence C. Little, at the laboratory's emergency committee headquarters in New York.

"Our object is to develop for research throughout the United States, Canada and Europe a source of experimental material which at any time can be guaranteed to be a normal control population for a group of animals being used elsewhere," Dr. Little stated.

Radioactivity can permanently change living cells, among them the reproductive cells from which all future generations are formed. In order to understand such changes, to foresee them, to prevent, direct or evaluate them it is absolutely essential to have control animals completely isolated from any source of radioactivity or atomic energy. Radioactive isotopes are now being used in more and more laboratories in a search for cancer cures and in a search for better means of fighting atomic energy damage.

Results of use of a radioactive chemical in cancer must be compared with the course of the cancer in animals untreated. But if the ancestors of these untreated animals had been exposed to radioactivity through living in the laboratory where the chemicals were being tested, they would not give an accurate control to compare with the treated animals.

Besides excluding all radioactive isotopes or animals treated with them, the Jackson Laboratory will have special isolation rooms and units where any chemicals with cancer-causing properties will be used.

The laboratory, long famous for its specially bred strains of animals for cancer and other research, is now conducting a drive for additional funds to rebuild the laboratories and re-establish the animal colonies that were largely destroyed by forest fire last fall. The drive is to meet the present emergency, it was pointed out. It will not be an annual one, and is not in competition to the current drive of the American Cancer Society which conducts an annual campaign for cancer-fighting funds.

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GOURMET'S DARLINGS — Ordinarily shy, and inclined to race for the water when humans approach, when the terrapin once digs a nest, she will not leave until she has carefully covered and camouflaged her eggs. Nest is ingeniously covered so that airpocket remains, preventing eggs from spoiling. Spoon-fed for years in North Carolina waters under a joint federal-state project, terrapins are now being put out on their own. (See SNL, April 10.)

VETERINARY MEDICINE

Calves Blinded, Crippled By Lack of Vitamin A

➤ TWO new vitamin-deficiency diseases in cattle have been discovered by Dr. Lane Moore of the U. S. Department of Agriculture. Both affect calves, and result from lack of vitamin A, either in the diet of the cow before calving or in the diet of the calf itself immediately after birth.

The first malady is an overgrowth of spongy bone in the skull, especially around the eye-sockets. This closes the channel through which the optic nerve passes from the brain to the eye, pinching off the nerve and causing total blindness.

The other result of vitamin A lack is an increase in the pressure of the spinal fluid to as much as six times normal. This destroys the calf's ability to coordinate its muscle movements. If the affected animal is given vitamin A, its spinal fluid pressure slowly returns to normal and muscular control is restored.

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AERONAUTICS

"Package" and Power Give Jets High Speed

➤ AN airplane's speed is due to the power you can put into the engine, plus the smallness of the "package" you can wrap that power up in, two aviation engineers explained.

Reinout P. Kroon, engineering manager of the Westinghouse Aviation Gas Turbine Division in Philadelphia, and Winston R. New, manager of the Laboratory, discussed the principles of jet propulsion as guests of Watson Davis, director of Science Service, on Adventures in Science heard over the Columbia network.

Jet engines are suitable for high speed because they are very small, light and simple for their power. That is one of the reasons for their terrific speed, the engineers stated. Smallness is essential to speed because it reduces the frontal or so-called "barndoor effect" you get in pushing a piston engine through the air at high speed.

"With modern jet engines, this saving in frontal area is so great that a single engine can give the power that it would take conventional engines with ten times the frontal area to produce," Mr. Kroon declared.

The other reason for the speed of a jet engine is the fact that the faster a jet-powered plane goes, the more power its engine produces. That is why a jet engine has virtually no power limitations —its thrust power goes up constantly as the plane goes faster. A piston engine, on the other hand, produces relatively constant horsepower, no matter what its speed.

Five years from now, engines may be built powerful enough to drive airplanes at 1,400 miles per hour, the engineers predicted. That will leave it up to plane designers to plan an airplane that can hold the engine, they concluded.

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GEOLOGY

Glaciers' Autographs Are Collected by Briton

➤ GLACIERS' autographs are being collected by a London scientist, Dr. G. Seligman of the British Glaciological Society. The procedure is very simple: he holds a sheet of paper against a smooth surface on the ice and rubs it with a soft pencil, bringing out the pattern of the ice crystals beneath.

He finds that the crystals are "surprisingly small," particularly where the ice is actively flowing. There also seems to be some relation between the crystal size and the steepness of the glacier bed.

Dr. Seligman invites persons who have glaciers available to cooperate with him in this new type of study.

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PLANT PATHOLOGY

Replanting of Elms To Be Tested in New England

➤ WHETHER young elm trees can profitably be planted where the Dutch elm disease has destroyed their predecessors is to be tested in New Haven in a cooperative test that has been planned by the Connecticut Agricultural Experiment Station and the New Haven Park Department.

About 250 young trees will be set out. Part of them will be supplied with water containing a chemical, oxyquinoline benzoate, which is claimed to be effective against the disease-causing fungus. Several different groups will be treated with DDT sprays, on various schedules. One group will be left untreated, as controls. Full answers are not expected for several years.

Dutch elm disease, incidentally, is a misnomer. The elm-killing fungus did not originate in the Netherlands, and did not come to the United States from that country.

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IN SCIEN

PSYCHOLOGY

Superstition in Pigeons Developed by Experiments

➤ THE superstition that makes a card player get up and walk around the table to "change his luck," can be produced experimentally in pigeons. The "superstitious" birds were developed by Dr. B. F. Skinner, psychologist at Indiana University, Bloomington, Ind.

These birds go through all sorts of strange rituals even more elaborate than that of a baseball pitcher. One goes running wildly around his cage—always in the same direction. Another pokes his head into one of the upper corners of the cage. Another acts as if he were trying to toss something with his head. Two birds swing their heads and bodies in a sort of pendulum motion.

It was fairly easy, Dr. Skinner found, to teach the pigeons to trace their luck to such absurd gestures. All he had to do was to rig up a clock to give food to the birds at regular intervals, entirely regardless of what the bird is doing at the moment. The bird, who is ravenously hungry, tends to repeat rapidly whatever he was doing when the food arrived.

The trick in setting up the "superstitions" was just to set the clock to give food at frequent intervals. If a bird is swinging his head and gets a seed, and then he is given another seed after a few seconds, the chances are he will be swinging his head when the second one arrives. Like the card player, who interprets this as a "run of luck," the bird learns to repeat his gesture.

If the clock were set slower, however, there would be less "superstition" because the chances would be greater that the bird would be in a different part of the cage doing something altogether different when the second seed came.

Fifteen seconds, it was found, is an effective timing for producing superstitions; one minute is too long. Once the superstition is set up, however, the time can be lengthened. One bird was kept repeating this absurd gesture for many hours with a one-minute interval between rewards.

Dr. Skinner describes his superstitious pigeons in the *Journal of Experimental Psychology* (April).

Science News Letter, April 17, 1948

NE FIELDS

BIOCHEMISTRY

Penicillin Makes Germs Prisoners, Study Shows

➤ WHY sodium penicillin is so deadly to germs has been discovered by Prof. Ernst A. Hauser, of the Massachusetts Institute of Technology, Cambridge, Mass.

Contrary to former opinion, sodium penicillin when dissolved in water does not form a true solution but a colloidal solution, a sort of finely divided jelly. Penicillin dissolves in the blood stream and coats the germs with an impenetrable layer of colloid. Trapped in this jelly, the germs find themselves prisoners, unable to move, to forage for food, to multiply.

In a study of the chemical behavior of this very important drug, Prof. Hauser and his co-workers found that sodium penicillin markedly reduces surface tension, that is, it acts in the same way as a soap.

Looking at the solution through an ultramicroscope, they noticed that the more potent the drug was in action, the more finely divided it appeared. When this test is applied to determine the potency of penicillin, it will be possible to give patients smaller but more effective doses.

Science News Letter, April 17, 1948

BOTANY

Mushroom Soup Prepared From Asparagus or Pears

➤ MUSHROOM soups, and other mushroom-flavored gourmets' delights, can be produced without having the actual mushrooms, out of the supporting thread mass, or mycelium, of mushrooms grown in a liquid medium made of such cannery wastes as asparagus butt juice or press juice from pear waste, supplemented with certain mineral salts.

This suggestion for the possible utilization of cannery wastes, which makes it possible to dispense with the increasingly scarce horse manure that has long been the mushroom-grower's standby, is offered in *Science* (April 9) by Dr. Harry Humfeld of the U. S. Department of Agriculture, who carried out his experiments at the Western Regional Research Laboratory in Albany, Calif.

He inoculated the cannery-waste nutrient media with mushroom threads obtained from a commercial mushroom grower, and let them grow until a sufficiently massive matted clump had developed. He got rid of the culture fluid by centrifuging and washing, then froze and dried the mycelium. He found the flavor satisfactorily "mushroomish", so that the material was suitable for soups, gravies and similar purposes, though of course not for dishes requiring mushroom caps or buttons. Chemical analysis showed a close similarity to ordinary market mushrooms.

One beauty of the new technique is the rapidity with which new growth can be obtained, once a sufficient mass of mycelium has been built up. Half the growth can be harvested, and in 12 hours the same quantity can again be removed, and so on indefinitely so long as fresh nutrient juice is supplied.

Dr. Humfeld also suggests that this technique might be employed for the culturing of other kinds of higher fungi, useful in the production of commercial solvents, antibiotics and other substances.

Science News Letter, April 17, 1948

ANTHROPOLOGY

African Man-Like Ape May Have Been Ape-Like Man

➤ THE man-like ape of South Africa, Plesianthropus, may have been an ape-like man instead. Such is the indication of some recent research into his brain size made by his discoverer, Dr. Robert Broom of the Transvaal Museum, along with Dr. J. T. Robinson.

Restorations of the brains to fit the cavities of the several skulls that have thus far been discovered give volumes ranging from as low as 400 cubic centimeters in females to as high as 700, or possibly even 750, in the largest male skull.

Modern gorillas, which are much larger animals than was Plesianthropus, have 500-cubic-centimeter brains, while the cranial content of a modern man's skull is 1500 cubic centimeters or more.

Writes Dr. Broom, in a letter to the editor of *Nature* (March 20): "We know that Plesianthropus had a pelvis that was essentially human, and we can be sure that it walked on its hind feet and used its hands for the manipulation of tools and weapons. If some of the males had brains of perhaps 750 cubic centimeters, we can say with confidence that, if Plesianthropus was not quite human, it was nearly human."

Science News Letter, April 17, 1948

ENGINEERING

Diesel Research Equipment From Germany to Serve Us

➤ COMPLETE equipment of a former German diesel engine research laboratory, one of the world's largest and best at the beginning of the war, will soon be in use at the Oklahoma Agricultural and Mechanical College, Stillwater, Okla.

This equipment, valued at over $1,000,000, will be used in the newly established Oklahoma Institute of Technology, formerly the division of engineering of the institution. This state college will have over $100,000 annually to conduct diesel research and instruction, and this equipment will make it the second largest diesel research center in the United States.

The equipment is a gift from the federal government to the college. It was formerly in the Klockner-Humboldt-Deutz Diesel Engine Research Laboratory at Oberursel, Germany. The Supreme Headquarters Allied Expeditionary Forces sent it to the United States to prevent it falling into the hands of any unfriendly nation and as a means of advancing diesel research in this country.

The complete laboratory consists of three units: an engine testing laboratory for engines of from one to eight cylinders, a materials testing unit, and a fuel injection laboratory.

Science News Letter, April 17, 1948

INVENTION

Arc Process Cuts Holes in Wire-Drawing Diamond Dies

➤ TINY diamonds have minute holes bored through them more rapidly and cleanly by a newly patented arc process for making dies used in the drawing of super-fine wires. Hitherto the drilling has been accomplished by mechanical means alone, using fine steel needles, with diamond dust as the abrasive. In the new method, this kind of drilling is still used, but in addition a current is fed through the needle, with the diamond embedded in its metal dop to complete the circuit. The minute resulting arc greatly speeds the several steps of the drilling.

Rights in U. S. patent 2,438,941, issued on this invention, are assigned royalty-free to the government by the five-man team of inventors: C. G. Peters, F. K. Harris, W. B. Emerson, I. L. Cooter and K. F. Nefflen.

Science News Letter, April 17, 1948

PUBLIC HEALTH

Flyless Age Now in Sight

Many towns have waged successful campaigns against these enemies of man and animal with combined weapons of DDT and modern sanitation.

By GERTRUDE ELMSLIE ARUNDEL

➤ BEELZEBUB, prince of devils, was originally god of flies. His name, incised in cuneiform script on ancient clay tablets, is *Baal-Z'bub,* which englishes as "lord of buzzing things." His reign has endured through centuries of filth-engendered pestilence, yet his kingdom is not an everlasting kingdom. Within the past three years, city after city in our land has risen in revolt against him; his subjects have been massacred by millions. We are within sight of a flyless age.

Here are the stories of some of man's successful uprisings against the tyranny of the flies:

In the university town of Moscow, Idaho, there's no market for fly swatters any more. Last year many residents left their windows unscreened all summer long; restaurants did away with flytraps and sticky flypaper and propped open their screen doors. Indeed, flies were so scarce that for two weeks in September entomologists at the University of Idaho were unable to trap a single fly for their research experiments.

Flies Can Be Abolished

From every town where people have rolled up their sleeves and sprayed alleys, stockyards, dwellings, farm buildings with DDT, comes the same good news: the fly, enemy of comfort and carrier of disease to man and beast, can be abolished.

On Mackinac Island, Michigan's famous summer resort, where automobiles are banned and horses are the chief means of transportation, flies were always a serious health menace. Each season hotels had to set out flytraps by the hundreds. Surrey drivers had their spray guns handy at all times, and new coachmen were warned not to take their teams into parts of the island where swarms of flies had maddened more than one horse into bolting. Then the State Health Department decided to take action. A fire-truck pump, rigged with tanks of DDT, sprayed hotels, restaurants, streets and every building in the business district. Such notorious fly hangouts as horse barns, manure piles and the public dump got extra doses. The DDT wiped out flies so completely that coachmen stowed away their horse nets, and hotels burned their flytraps in a glorious good-riddance celebration on the Fourth of July.

For two years now the Health Department of Muscogee County, Georgia (which includes the city of Columbus), has been battling flies as part of an intensive clean-up campaign. Nearly 23,000 buildings—dairies, food establishments, business houses and private homes—have been blanketed with DDT. Muscogee citizens proudly announce a 90% reduction in the county's fly population—at a cost of 30 cents per inhabitant. And Columbus doctors report a sharp decline in cases of diarrhea and dysentery among children.

Breeding Places Cleaned Up

Evansville, Indiana, also slaughtered flies by the million last summer. When the breeding places had been cleaned up and DDT spread in strategic spots, a flytrap was baited and set outside the door of the college cafeteria. In two days the trap yielded one lonely fly. "Ordinarily," points out Dr. E. A. King, Evansville's Health Officer, "that trap would have been buzzing with hundreds of flies after only a few hours." Tests made at city dumps and other popular fly gathering places showed similar results. "I do not hesitate to estimate that 999 out of every 1000 flies in Evansville were killed in the campaign," says Dr. King. "And there's no way of telling how many million were pre-destroyed through the sudden demise of their ancestors."

Things like that are happening in progressive communities all over the country. Whole states, notably Idaho and Iowa, are putting DDT to work against this age-old pest—and getting phenomenal results.

Iowa is launching its third annual "No Flies in Iowa" campaign. Last summer, encouraged by the almost total elimination of flies in towns where fly control was tested in 1946, more than 400 communities armed themselves with DDT, and 83% of the state's farmers did their part by flyproofing their cattle or dairy barns. Twenty-seven demonstration centers were set up to train local committees in fly-killing techniques. Residents were bombarded with pamphlets telling them how and when to use DDT, and emphasizing that they should clean up round the house so as to give the poison spray its maximum effectiveness. "Using DDT without proper sanitation is like boxing with one hand behind your back," says Dr. Harold Gunderson, Iowa State Extension entomologist. Dr. Gunderson swears that in the Iowa towns which cooperated, stores and restaurants were completely free from flies throughout the summer, and homeowners reported that they never took the swatter off the hook. In Mason City, the caretaker of the municipal dump, for the first time in his career, was able to eat lunch out of doors without being pestered by flies. "The amazing thing about this program," says M. W. Lackore of the Ames, Iowa, Chamber of Commerce, "is that it really works."

Not only does it work, but it is amazingly cheap. Mason City, with a population of 60,000, enjoyed a fly-free summer for about $2500, raised by local citizens. Solicitors said that it was the easiest money they had ever tried to raise.

To city dwellers flies are a menace and a nuisance. But to farmers, their extermination means more beef, more milk, cleaner, healthier animals. Hornflies, those tiny insects which you can see by the thousands sucking the blood from the back of a cow, have been eating up the American farmer's profits at the rate of millions of dollars every year. When hornflies are bad, which is for 14 weeks in most parts of the country, beef cattle will not put on weight and dairy cows will not give their full quota of milk.

Cattle Sprayed with DDT

Spectacular results—checked by state agricultural experts—have been obtained by spraying cattle with DDT. Dairymen report increases in milk production up to 25%; treated herds gained 32% more weight than unprotected herds; cattle growers in Kansas got 50 pounds of extra beef per animal for every five cents' worth of DDT. Three applications of DDT during the summer will protect cattle for the season. Stockmen say: "DDT is so effective that cows don't need tails any more. Might as well use them for oxtail soup."

Last year more than half the cattle in Kansas and South Dakota and nearly

SPREADER OF FILTH AND PESTILENCE—Perched on the edge of a saucer, the fly carries filth to food, and is believed to spread such diseases as tuberculosis, cholera, dysentery, infantile diarrhea and typhoid, among others.

all the cattle in Oklahoma were sprayed with DDT—because it pays!

Dr. Ellsworth Fisher, University of Wisconsin entomologist who directed last year's dairy fly control operations, gives the 1000-odd "custom sprayers" in his state credit for making the program a success. Many of these operators are ex-GIs, others are experienced exterminators who have added DDT to a long list of insect-killing weapons.

Business of Killing Insects

In Princeton, Illinois, two former Air Force pilots, Robert Kirkpatrick and Donald Rickard, have built up a profitable business killing insects by land and by air. With a Navy-surplus plane they shower corn with DDT for protection against the corn borer; with a jeep and power sprayer they douse cattle and farm buildings with DDT for fly control. They charge $40 for a season's spraying of animals and buildings on an average farm—one visit in June, another in August. "Many farmers were skeptical at first," Kirkpatrick says, "but took the gamble. Now they're enthusiastic. One day we sprayed a farm and its herd of 32 cows. The next day milk production went up ten gallons, and stayed up." Last year Kirkpatrick and Rickard had about 90 customers for fly control, all of whom signed up for service again this spring. One of their biggest jobs was the spraying of the county fair grounds and its buildings, which they did so effectively that even the picnic area, strewn with sandwich crusts and watermelon rinds, was free from flies.

Three years ago George Hockenyos, custom sprayer of Springfield, Illinois, added fly control to the many services of his Sentinel Pest Control Company. Hockenyos sprays homes three times a year, charging about $10 for each treatment. Last summer he sprayed the 25 buildings of a state institution. One time around took him four days, but when he got through there were "99.44% fewer flies." Hockenyos is confident that some day flies will be a rare sight round all homes and barnyards. An old timer in pest control, he advises newcomers to work for a while with an experienced outfit before going out on their own. It isn't just a matter of killing flies, he points out. "You have to kill them in the right places. In a restaurant, for example, DDT should not be used near open food. Flies would walk through the poison, then die in the food. After a few dead flies in the soup," he says, "the restaurant has lost its business —and you've lost yours."

Caution Against DDT Poisoning

While harmless to people and to most animals in the weak dilutions prepared for these campaigns, DDT should be used with caution, for it is after all a poison. Promiscuous treatment of crops and fields may result in the poisoning of birds and honey bees, and upsets in the balance of nature. When spraying is done on the farm, drinking bowls and feed troughs should be covered, and DDT in oil solution should never be used on cattle, for it will penetrate the skin. And cats should never be sprayed with it, because of their cleanly habit of licking themselves.

Ever since flies were sent to plague the Pharaohs, we've been shooing, swatting and swearing at them. And they've been hopping around from filth to food, carrying some 20 diseases—including tuberculosis, cholera, dysentery, infantile diarrhea and typhoid. It takes years to gather final evidence, but present indications are that the incidence of many of these diseases will drop along with the fly population. Yet now there seems no doubt that with the combined weapons of DDT and modern sanitation we can make the fly a rare museum specimen.

There's no reason why your community cannot be made flyproof this summer. If you live on a farm, write to your county agent or to your agricultural experiment station for advice and further details. If you are a town or city dweller, get your local newspaper or service clubs to start a campaign, or call up your health commissioner and keep buzzing until he does something.

Science Service took a prominent part in the anti-fly campaign of 1947, through a series of illustrated articles written by Dr. Frank Thone, and is preparing to participate similarly in the 1948 drive. The foregoing article was prepared for the Science News Letter in cooperation with The Reader's Digest; it will appear in the June issue of that magazine.

Science News Letter, April 17, 1948

MEDICINE

New Chemical Improves Blood Test for Syphilis

➤ BLOOD tests for syphilis are becoming more reliable, thanks to a new testing chemical discovered by Dr. Mary C. Pangborn of the New York State Department of Health. Details of the chemical and its use were reported by Dr. Pangborn at the venereal disease symposium held in Washington under the auspices of the National Institute of Health.

When a blood test for syphilis is done on a patient with malaria or a vaccinated person, the report often is positive even when the person does not have syphilis. Such tests are called "false positives." They have long been a source of worry to doctors and patients.

Many of these false positive tests will be eliminated when the new testing chemical is used, it appears from results with it so far.

The chemical is named cardiolipin. It is a phosphorus containing fatty substance obtained from beef heart. For

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By H. T. PLEDGE

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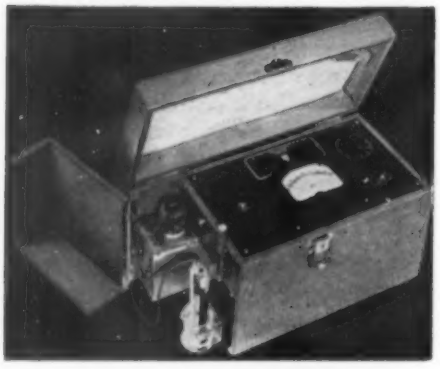
The *sting* of a honeybee generally hurts even the experienced beekeeper, but immunity from after-effects due to the poison can be gradually acquired.

Rare chemical elements, long thought to be useless, are now finding important applications; *uranium*, of atomic energy fame, was used until recently principally in coloring glassware.

The Galapagos islands, on the equator 500 miles west of South America, have never had any land connection with other lands; their 89 species and subspecies of *bird life* must have arrived as chance wanderers.



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many years extracts from beef heart have been used in blood tests for syphilis, but since these were crude extracts it was almost impossible to get two of them exactly alike. Consequently it was difficult to standardize the test material so that the test would be the same when performed in different laboratories.

Efforts to purify the beef heart extracts led to discovery of the new compound, cardiolipin.

Besides its advantages of specificity and ease of standardization, the new chemical has the further advantage of being adaptable to different test procedures.

Science News Letter, April 17, 1948

BIOCHEMISTRY

Chemical Link to Vitamin

➤ DISCOVERY and synthesis of a new chemical compound which forms a third link in the chain leading to production in the body of the pellagra-preventing vitamin is announced by Drs. H. K. Mitchell and Joseph Nyc of the California Institute of Technology at Pasadena.

The chemical, known as 3-H for short, can also be obtained from love-in-the-mist, though it is unlikely you will be chewing the seeds of this plant, known botanically as Nigella, to get your daily ration of the vitamin.

The vitamin is niacin, or nicotinic acid, known for years as both cure and preventive of pellagra. More recently it was discovered that a quite different chemical, tryptophane, could be substituted for nicotinic acid in the diet of rats without any damage. They grew just as well on one as the other.

Tryptophane is an amino acid, one of the building-blocks of protein. Rats can get along without nicotinic acid if they are given tryptophane because, it is believed, they convert the tryptophane into nicotinic acid in their bodies. Proof for this conversion, however, has not yet been obtained.

Dr. Mitchell and associates, working with the red bread mold known scientifically as Neurospora, uncovered two steps in the chemical conversion chain. Tryptophane breaks down into a second stage to become a compound known as kynurenin. This is a result of a rearrangement of the atomic pattern of tryptophane.

In a third stage in the conversion, just discovered, a side chain of atoms is discarded. This results in the new compound, 3-H, known chemically as 3-hydroxyanthranilic acid.

Feeding certain strains of the red bread mold, Neurospora, any of the three isolated chemical compounds causes an increase in their production of nicotinic acid. Tests are now being made with rats and preliminary work has shown that feeding these animals any of the three compounds results in their excreting more nicotinic acid.

Whether it will work in man remains to be seen but Dr. Mitchell points out that surprising number of chemical mechanisms are common to both large and small organisms.

Science News Letter, April 17, 1948

Science Service Radio

➤ LISTEN in to a discussion on uranium, source of atomic energy, on "Adventures in Science" over the Columbia Broadcasting System at 3:15 p.m. EST Saturday, April 24. Dr. Robert A. Millikan, head of the California Institute of Technology, as the guest of Mr. Watson Davis, director of Science Service, will discuss the shortage of uranium. Dr. Harlow Shapley, director of Harvard College Observatory, will give a brief report on the ideas and accomplishments of Science Service.

Science News Letter, April 17, 1948

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CHEMISTRY

Protein Protects Metals

Chromated milk-protein films are used to coat such metals as zinc, iron, brass and aluminum to protect them from corrosion damage.

➤ A MIXTURE of casein from milk and a chromate is found to be an inexpensive, valuable protection for such metals as zinc, iron, brass and aluminum from damage in mildly corrosive atmospheres, the National Bureau of Standards reveals.

The process is simple. The metal to be coated is first dipped in a solution of casein, or of albumin or gelatin, allowed to dry, and then immersed in an acidified chromate solution. This contains weak chromic acid or a dichromate of zinc, iron or nickel. The protein coating becomes impregnated with the chromate, which both hardens it and delays corrosion.

During the war ordinary carbon steel became widely used as a substitute for scarce copper, brass, aluminum and stainless steel. While the steel was generally protected with zinc coatings, the tendency of the zinc to form objectionable corrosion products brought about a wide use of chromate films on the zinc. These films were found useful, but it was thought that an enhanced corrosion resistance would be obtained by applying a larger quantity of chromate to the metal. The proteins were found to be a good medium for increasing the amount of chromate on the metal surface since they are basic and readily absorb or combine with chromic acid.

The development at the Bureau of Standards was carried out by staff members Abner Brenner, Grace Riddell and Robert Seegmiller. The chromated protein films are yellow and transparent. They do not crack or separate when the metal is bent. They are not injured by heating to approximately 300 degrees Fahrenheit, while most chromate films produced chemically on zinc lose much of their protective value at about the boiling point of water.

The protective value of these chromate-protein films is much superior to that of corrosion-inhibited oils and waxes, the Bureau states. They are almost insoluble in water, and are so hard that they can not be scratched with the finger nail. They can be quickly removed from metal parts by an alkaline solution such as 5% sodium hydroxide.

Science News Letter, April 17, 1948

GEOLOGY

No Antarctic Uranium

➤ ANTARCTICA is not likely to be the scene of a "uranium rush" or any other kind of international scramble for mineral wealth, at least in the immediate future. Comdr. Gerald L. Ketchum, leader of the Navy's two-ship 1947-48 Antarctic expedition which has just returned after five months "down under," stated that "no minerals of any commercial value" had been found at any point on the coast. And the expedition worked its way along the shores of the world's southernmost continent through more than half its perimeter.

More than two tons of mineral specimens were brought back by Dr. Earl T. Apfel of Syracuse University, geologist of the expedition, but they are "just rocks." They do have considerable scientific interest, for by analyzing them Dr. Apfel hopes to get some idea of the geologic age of the continent. In one area there were quantities of garnets, left by the disintegration of granitic rock; but these again are without commercial value.

Disillusioning also was a visit to the Bunger Oasis, the ice-free area of land and lakes spotted from the air by a preceding expedition. It proved to be ice-free merely because the lie of the land caused the glaciers to part instead of flowing over it. The lakes, which were unfrozen when observed before, were frozen this time, and they were all salty, at that. No sign of life was found in the place, save one dead seal.

The expedition accomplished its primary mission, which was to make exact geodetic locations of certain landmarks, with which the air photographs taken on the preceding Navy expedition can be "tied in," thereby making more accurate charts possible. Comdr. Ketchum praised the performance of his two ships, the new ice-breakers *Burton Island* and *Edisto*. He also said that the expedition's helicopters performed well, within their limited range.

Weather was "nice," he added. Average temperatures were a little below freezing, and the lowest reading recorded was four degrees above zero Fahrenheit.

Science News Letter, April 17, 1948

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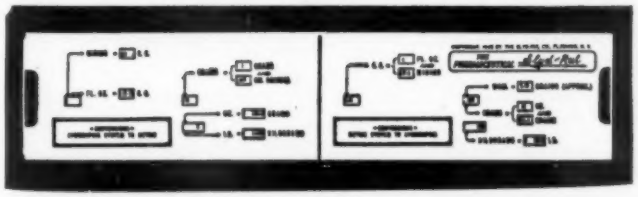

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ECOLOGY

NATURE RAMBLINGS

by Frank Thone

East Meets West

➤ EASTERNERS, spending their first spring season in southern California, Arizona or New Mexico, are very apt to exclaim over finding violets and buttercups, anemones and shooting-stars among the chaparral. Even some of the other flowers which they don't recognize so easily, like some of the western pentstemons and mimuli, have the same delicacy of texture to their leaves, the same dainty tints to their flowers, that mark the spring offerings of the humid woods of the East and somehow seem out of place in the harshness of the Western brushlands.

The secret is that for a few weeks in spring the desert is not quite a desert, and the humid woods are not as humid as they seem: East and West have met each other halfway. What little rain the desert gets is most likely to fall in late winter and early spring, and the seeds and bulbs and rootstocks of the desert's spring flowers take quick advantage of this moisture and expand their leaves and open their flowers in the mild warmth of the April sun.

At the same time, the Eastern woodlands are being swept by spring winds and are getting nearly the full benefit of the warm sunshine, with as yet very little development of the leafy canopy that will later block off a large part of the light and slow the winds to weak breezes. This means that evaporation rates are much higher in April than they will be from mid-May onwards: for a little while, the woodlands approach the condition of the chaparral as the chaparral approaches the condition of the woodlands.

Somewhat similar, though with a difference, is the later coming of spring to the higher altitudes, where the last of the snows do not thaw away until June or (at the greater elevations) even early July. Here the same delicate spring flowers appear, to strangers' eyes seeming incongruous as they crowd amid the rocks or carpet a meadow on the bank of a glacier-fed stream.

Blossom-time is short on the mountainsides, so you are apt to find a grand jumble of spring, summer and autumn flowers, all hurrying through their cycle of bloom and seed production, as if they knew they have a frozen deadline to beat. There will be harebell and phlox for the spring, Indian paintbrush and evening primrose for the summer, and fringed gentian and wild aster for the autumn, all going at once.

Science News Letter, April 17, 1948

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MEDICINE

Ulcer Patients Need Rest

➤ COMPLETE physical rest for patients with stomach ulcers gets strong support from research by Dr. C. W. Lillehei, National Cancer Trainee, and Dr. O. H. Wangensteen, professor of surgery, at the University of Minnesota Medical School at Minneapolis.

Moderately severe physical activity from fairly strenuous exercise, they find, helps bring on a certain type of ulcers in dogs. The ulcers are the kind that come following injections of histamine, a body chemical which stimulates stomach activity and dilates small blood vessels.

Histamine provoked ulcers about three times as often in dogs tired by strenuous muscular activity as in dogs that were not doing tiring exercise, the scientists report to the *Society for Experimental Biology and Medicine* (Jan.).

Strangely, however, muscular fatigue decreased the output of hydrochloric acid in the dogs' stomachs. By decreasing the acid output, it might seem that muscular fatigue would decrease instead of increase ulcer formation. The apparent paradox, the scientists explain, suggests that muscular fatigue affects the stomach lining itself and makes it more vulnerable to the action of the acid-pepsin mixture in the stomach juices.

Strenuous muscular exercise probably affects the stomach lining by changing its blood circulation. The exercise would cause blood to be diverted from the stomach lining to the leg muscles.

Constricting the blood vessels, so that less blood gets to the stomach lining, aids and abets ulcer formation, the scientists found in another experiment. The blood vessel constriction in this case was brought about by injections of adrenalin. This fits in with the muscular fatigue findings because muscular fatigue is known to cause liberation of adrenalin in the body.

Science News Letter, April 17, 1948

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BIOLOGY AND HUMAN AFFAIRS—John W. Ritchie—*World Book,* new ed., 818 p., illus., $3.40. A very attractive high school text.

COLLEGE PHYSICS—E. F. Burton, H. Grayson-Smith and F. M. Quinlan—*Pitman,* 724 p., illus., $4.50. A text intended for those who are not going to specialize in any of the sciences.

INTERNATIONAL MIGRATION AND ONE WORLD—*National Committee on Immigration Policy,* 107 p., illus., 25 cents. Background material for the understanding of this important problem. It contains a chapter on "The Displaced Persons—An Immediate Problem in International Migration."

PERSONNEL AND TRAINING PROBLEMS CREATED BY THE RECENT GROWTH OF APPLIED STATISTICS IN THE UNITED STATES—Committee on Applied Mathematical Statistics — *National Research Council,* 17 p., paper, 25 cents.

PINTO'S JOURNEY—Wilfrid S. Bronson—*Julian Messner,* 57 p., illus., $2.50. An adventure tale which introduces children, and the adults reading over their shoulders, to life and nature in an Indian village. The beautiful drawings are by the author.

PROCEEDINGS OF A SYMPOSIUM ON LARGE-SCALE DIGITAL CALCULATING MACHINERY—Navy Department Bureau of Ordnance and Harvard University—*Harvard University Press,* 302 p., illus., $10.00. The authoritative opinions of mathematicians, physicists, and engineers interested especially in this field.

SCIENCE AND TECHNOLOGY IN CHINA, Vol. 1, No. 1, S. C. Woo, Ed.—*Natural Science Society of China,* 16 p., illus., paper, bimonthly, single copies 40 cents, year $2.00. U. S. subscribers should write to Mr. S. H. Doo, 7137 Pennsylvania Ave., Pittsburgh 8, Pa. A new science journal published in English at National Central University, Nanking. It is, in spirit, a continuation of a journal published in cooperation with the British Council in China.

SCIENCE AND YOU—George W. Fowler, Morton C. Collister and Ernest L. Thurston—*Iroquis,* 378 p., illus., $2.12. A text for the seventh year.

SEA ISLANDS OF GEORGIA: Their Geologic History—Count D. Gibson—*University of Georgia Press,* 73 p., illus., $2.00. The answers to the questions of visitors concerning these interesting islands born from a single large island and the result of glacial action and erosion.

SYNTHETIC PETROLEUM FROM THE SYNTHINE PROCESS—B. H. Weil and J. C. Lane—*Chemical Pub. Co.,* 303 p., illus., $6.75. The chemistry of the Fischer-Tropsch process for making gasoline from a variety of raw materials including natural gas and coal.

THE YEARBOOK OF PSYCHOANALYSIS, Vol. 3, 1947—Sandor Lorand, Ed.—*International Universities Press,* 309 p., $7.50. A group of papers of interest especially to psychologists and physicians.

Science News Letter, April 17, 1948

VETERINARY MEDICINE

Foot-Mouth Lab Shunned

A SHINY new $25,000,000 to $28,000,000 laboratory being planned to spearhead a long-range attack on foot and mouth disease is already one of the nation's least popular scientific institutions.

Department of Agriculture officials want to build the new research center at Camp Hero, Montauk, Long Island. Long Islanders, it seems, do not want it.

Location of the laboratory has come under fire on the floor of the House of Representatives. A bill introduced by Rep. George W. Gillie, R. Ind., a doctor of veterinary medicine, calls for construction of the foot and mouth study center off the mainland of the U. S. Islands separated from the mainland by waters suitable for deep-water navigation were permissible.

This would have permitted use of the Long Island site, termed "our first choice" by Dr. B. T. Simms, chief of the Department of Agriculture's Bureau of Animal Industry.

But Rep. W. Kingsland Macy, R., N. Y., in whose district the laboratory would be established, protested. He introduced an amendment which was passed to prevent construction of the center on a site connected to the mainland by a bridge or tunnel.

Dr. Simms declares that the laboratory would not be dangerous. Infected cattle would be kept in buildings where even the outgoing air would be sterilized. Wastes would be piped out to sea. There would be no noises or odors to disturb neighbors to the mile-square laboratory area.

The buildings would even "be pleasing to the eye," the Department of Agriculture spokesman has promised.

And most important to the fight on foot and mouth disease would be the prospect of getting leading scientists to come to the laboratory near New York City. Getting scientists for the project is a major problem, Dr. Simms emphasizes.

New York congressmen, however, say that if the laboratory isn't good enough for the mainland, it isn't good enough for Long Island.

Texas representatives supported the measure against the disease, now some 300 miles from the Rio Grande, but they added resolutions from groups of cattlemen urging that the laboratory not be located in the Lone Star state.

Members of the House are generally agreed on the importance of setting up the new laboratory, but no one, it appears, wants it in his district.

Science News Letter, April 17, 1948

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WINDOW WASHER, and automobile cleaner, is a long, light aluminum tube attachable to an ordinary garden hose and a variety of brushes to attach to the other end. Water and brush combine to do the cleaning in this improved type of extension cleaner, and the user gets no wetting.

Science News Letter, April 17, 1948

ALL-METAL SLIDE RULE is claimed to be superior to the conventional rules made of wood because it does not swell with moisture and does not warp. It is precision-made and is unaffected by constant cleaning.

Science News Letter, April 17, 1948

VERY HIGH FREQUENCY (VHF) output, a type of radio wave coming widely into use in static-free radio, facsimile and television, is accurately measured by a VHF milli-wattmeter which operates on the ordinary house electrical current. One method of measurement with it uses a thermistor bridge arrangement; another a PM filament brilliance comparison.

Science News Letter, April 17, 1948

GAS TEMPERATURE INDICATOR, for use with gas turbines, ramjets and rockets, measures temperatures to 5,000 degrees Fahrenheit. It has a probe to insert into the gas stream and a gas thermometer which utilizes the density of the gas being measured as a direct indication of temperature.

Science News Letter, April 17, 1948

THREE-PIECE MATTRESS, held together with zippers, is easily separated

for handling and for interchanging the sections to assure even wear. The zippers, shown in the picture, permit either head or foot section to be turned upward for airing or under-mattress cleaning.

Science News Letter, April 17, 1948

PNEUMATIC HAMMER, an improved type for use with various replaceable small tools, delivers 5,000 strokes per minute on 100 pounds of air pressure, and operates with minimum vibration. This eight-inch hammer is for all kinds of chisel work, metal cutting, drilling and scores of other jobs.

Science News Letter, April 17, 1948

SHAVING STAND for the bathroom consists of an upright on a base with a crossarm at the top, one end of which is shaped to hold a shaving brush, suspended by the handle, and the other to hold a safety razor. The base has a slot for used razor blades and a removable bottom for easy emptying.

Science News Letter, April 17, 1948

DETECTOR for the invisible ultraviolet rays from a germicidal lamp is a tiny tube which may be held in the radiation where it glows from the ultraviolet. The glass in the tube passes the short-wave radiation, and a phosphor coating inside turns it into a visible green light.

Science News Letter, April 17, 1948

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Question Box

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